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391-3-4-.16 Composting and Mulching Facilities (COMPOST HANDLING FACILITY)

(1) Definitions

Composting: Means the controlled biological decomposition of organic matter into a stable, odor free humus**. (Please note this is defined in Act; thus, it is outside the scope of the stakeholder group and rule revision process.)**

Food Residuals: pre and post-consumer food.

Food Processing Residuals: organic material generated as a by-product of the food-processing sector that are non-toxic, non-hazardous, and contain no domestic wastewater. For the purpose of this section, the term does not include fats, oil and greases and DAF skimmings.

Agricultural Waste: Means the waste from customary and generally accepted activities, practices, and procedures that farmers adopt, use, or engage in during the production and preparation for market of poultry, livestock and associated farm products; and in the production and harvesting of agricultural crops which include agronomic, horticultural, and silvicultural crops and wastes resulting from aquaculture activities. The term does not include dead animals, wastewater or special wastes such as waste oils or other lubricants, unused fertilizers, or pesticide containers or residues.

Feedstock: Means any organic material used in the production of compost. Feedstocks shall not be considered as either additives or amendments.

Industrial by-product: for the purpose of this section means organic materials generated by manufacturing or industrial processes that are non-toxic, non-hazardous, contains no domestic wastewater, and passes the paint filter test.

Compost Leachate: Means a liquid that has percolated through or drained from feedstock categories B through D during the composting, mixing, storage, processing, unloading and/or curing stages.

Compost Runoff: Means a liquid that has percolated through or drained from feedstock category A during the composting, mixing, storage, processing, unloading and/or curing stages. No treatment and/or collection activities of compost wastewater are required.

In-vessel composting: means a process in which organic material is enclosed in a drum, silo, bin, tunnel, or other container for the purpose of producing compost, maintained under uniform conditions of temperature and moisture where air-borne emissions are controlled.

Source Separated Organics: means organic material that has been separated from non-compostable material at the point of generation including, but not limited to food residuals, food processing residuals, and unrecyclable paper.

(2) Exemptions

The following facilities are exempt from a Solid Waste Handling Permit:

(a) Backyard composting.
(b) Facilities composting only Category A feedstocks.
(c) Composting of food waste generated on-site and composted in containers designed to prohibit vector attraction and prevent nuisance odor generation. Total volume of the containers shall be limited to _ cubic yards or less.
(d) On-site composting at a K-12 institution for educational purposes. Total volume of feedstock shall not exceed __ cubic yards per month.
(e) Composting of biosolids at a treatment works already regulated by an NPDES as described in 391-3-6.06, land application system (LAS) as described in 391-3-6-.11 or other permit from EPD and in which case that permit has be modified in accordance with the Georgia Rules for Water Quality Control 391-3-6-.17 (3) c (1) to incorporate any necessary requirements for regulating the composting operation.
(f) Composting of dead animals provided such composting is in accordance with the requirements of the Georgia Dead Animal Disposal Act (O.C.G.A. 4-5); Georgia Department Of Agriculture Rules (Chapter 40-13-5).

(3) Feedstock Categories

The categories described below are not intended to be all-inclusive, but rather are set forth as guidance to assist owners and operators in determining the appropriate classification of a proposed or existing composting facility. The Division recognizes that case-by-case determinations may be necessary concerning selection of an appropriate category for a particular feedstock including industrial by-products not elsewhere classified. Accordingly, the Division may require that analytical and/or process information be supplied by the owner or operator to assist in making such determinations. At a minimum, the Division will require applicant to provide an analysis of metals and proof of compostability of a potential feedstock, including C:N ratio and soluble salts.

Feedstock Category A
Yard trimmings, land-clearing debris, agricultural waste generated and processed on-site, untreated and unpainted wood, or any combination thereof.

Feedstock Category B
Source separated organics and agricultural waste processed off-site.

Feedstock Category C
Sewage sludge and biosolids not managed in part of a treatment works as part of their NPDES or LAS permit issued in accordance with the Georgia Rules for Water Quality Control 391-1-6.

Feedstock Category D
Fats; oils and greases; DAF skimmings; dewatered septage; and municipal solid waste. These materials must pass the paint filter test prior to being incorporated into the active composting area.

Prohibited Feedstocks include:

1. Asbestos containing materials
2. Biomedical wastes
3. Any other prohibited wastes defined in Georgia Rules 391-3-4-.04 (6)

(4) Design and Operation Criteria for Composting Facilities

Class 1 Composting Facilities
Facilities composting, grinding, chipping, and/or mulching of Feedstock Category A, only, do not require a solid waste permit. Class 1 composting facility must submit a minor modification prior to operation if it is located at a solid waste handling facility. The use of farm animal manure, such as cow, horse, mule, hog, and poultry, and manure from herbivores (zoo) will be allowed and will not require permitting.

Class 2 Composting Facilities
The following facilities may operate under permit-by-Rule for Feedstock Categories A and B only:

1. Facilities composting no less than 75%, by weight, compostable feedstock generated at the permit-by-Rule facility location or facilities owned by the same person who owns the property containing the permit-by-Rule facility including agricultural cooperatives. Category A feedstocks will not count toward the 25% limit, as long as the condition in Class 2 Operating Standards #10 is met.
2. Facilities composting feedstock category B only that are limited to 500 tons per month of feedstock and no greater than 2 acres in size, in-process and bulking material onsite at any one time (finished qualified product does not count toward this total).

Class 2 Design Standards:

1. A compost area shall be constructed to maintain its integrity under operating conditions and be capable of supporting vehicular traffic on the area.
2. The compost area shall have runon and runoff control.
3. Capacity: the composting facility shall be adequate in size and capacity to manage the projected volume of compost and residue generated.
4. Maximum composting process windrow size and minimum composting process windrow spacing shall match the capability and requirements of the equipment utilized at the facility.
5. Access to the composting facility shall be limited to authorized entrances, which shall be closed when the facility is not in operation.

Class 2 Operating Standards:

1. Compost processing time shall be sufficient to produce satisfactory compost, essentially free of both odors and unstable organic matter. Any residues from the composting operation shall be promptly deposited in a permitted municipal solid waste landfill handled in such other manner as may be approved by the Division in accordance with the provisions of the Georgia Hazardous Waste Management Act, O.C.G.A. 12-8-60, et seq.
2. During operation, the integrity of the composting area is to be inspected annually and should be maintained, as needed.
3. Storage: the areas for storing wastes prior to processing must be clearly defined and the maximum capacity specified. No waste may be stored in excess of the designated capacity.

4. The facility must incorporate the Category B materials into windrows or cover in a manner that prevents odors and scavenging by vectors by the end of each operating day.
5. Waste or residue from composting facilities and any compost not sold or used, reused, or recycled must be disposed in a permitted disposal facility. Non-compostable waste residue shall be removed from the feedstock and compost, stored in a dumpster, and disposed of at permitted municipal solid waste landfill within 7 days.
6. Composting facilities shall be designed so that any compost leachate generated will be discharged in accordance with the Rules for Water Quality Control and, before final release, will be treated in a manner approved by the Division.
7. Operation and management of composting facilities shall be under the supervision and control of a responsible individual properly trained in the operation of such facilities at all times during operation.
8. Composting facilities shall be maintained in a clean and sanitary condition. Solid waste shall be confined to the designated storage area.
9. Operator of composting facilities shall comply with all local rules, regulations, and ordinances pertaining to operation of these facilities and all other applicable federal and state laws and rules.
10. Compost material shall not be accumulated speculatively. Storage of finished compost on site is limited to 9 months unless approved by the Division on a case-specific basis.
11. Disease vectors shall be controlled in accordance with Rule 391-3-4-.07(3)(f).
12. Suitable measures to control fires shall be provided.
13. Records shall be maintained that identify the weight or volume and origin of incoming waste. Records shall be maintained that identify the weight or volume of outgoing finished compost and company or person taking the finished compost.
14. Notice of final closure must be provided to the Director within 30 days of receiving the final load of waste. Any site not receiving waste for in excess of 180 days shall be deemed abandoned and in violation of these Rules unless properly closed. Notice of closure must include the date of final waste receipt. All feedstock and active, curing, and final compost material shall be removed from the facility.

Class 3 Composting Facilities
Class 3 composting facilities may compost feedstock categories A & B.

Class 3 Design Standards:

1. The composting facility must be designed by a professional engineer registered to practice in Georgia.
2. A compost pad shall be constructed under all areas proposed for composting and curing. The composting pad is to be designed to promote drainage to a leachate collection and containment system. The composting pad shall be capable of maintaining structural integrity under operating conditions, collecting all liquids and solids generated by composting process and shall be capable of supporting vehicular traffic on the pad. The composting pad shall be inspected for uniformity, damage, and imperfections during construction.
3. Prior to receiving feedstocks, the Division must be provided with written certification by a professional engineer licensed to practice in Georgia, that the facility has been constructed in accordance with the approved permit. Unless notified otherwise by the Division, within 15 days of receipt of the written certification, the facility owner or operator may commence composting operations.
4. Composting pad may be constructed of concrete, asphalt, a composite liner system (outlined in Rule 391-3-4-.07(1)(d)1.c) or earthen material (e.g., soil cement) with a permeability coefficient of no more than $1X10^{-5}$ cm/sec in the uppermost six inches of the pad and a permeability coefficient of no more than $1x10^{-7}$ cm/sec in the twelve inch base as confirmed by on-site testing. The compost pad is to be sloped to prevent ponding of compost leachate. Stormwater runon onto the compost pad shall be prevented. The compost pad for curing should have a permeability coefficient of $1X10^{-5}$ cm/sec and a thickness of 12 inches. No industrial waste may be used in the construction of the pad without approval from the Division.
5. An as-built survey of the facility shall be prepared by a Georgia registered site surveyor to ensure compliance with the approved Design and Operational Plan.
6. Compost leachate generated at the facility shall be stored in a tank, container, or lined impoundment. The compost leachate collection capacity shall be designed for a 25 year, 24-hour storm event. Compost leachate may be used in the composting operation for moisture addition. Excess compost leachate and compost wastewater shall be disposed in accordance with the Georgia Rules for Water Quality Control.
7. Maximum composting process windrow size and minimum composting process windrow spacing shall match the capability and requirements of the equipment utilized at the facility.
8. All-weather access roads shall be provided to the composting facility and provisions shall be made for prompt equipment repair or replacement when needed.
9. Access to the composting facility shall be limited to authorized entrances, which shall be closed when the facility is not in operation.

Class 3 Operating Standards:

1. The composting facility shall be operated only under the direct supervision of a trained operator who is present during operating hours.

2. During operation, the composting pad is to be inspected annually by a Georgia registered Professional Engineer providing a written assessment as to the integrity of the pad and recommending repair, as needed.
3. Upon arrival, all liquid feedstocks must be either transferred to a lined tank with secondary containment, sent to a permitted wastewater treatment facility, or shall be mixed with bulking agents or compost material to ensure that the feedstock is promptly absorbed and not allowed to flow as free liquid from the bulking material or from the compost windrows.
4. Food residuals must be stored in leak-proof containers or area prior to composting.
5. By the end of each operating day, all incoming category B feedstocks must be processed into composting windrows and covered in a manner that prevents odors and scavenging by vectors.
6. Disease vectors shall be controlled in accordance with Rule 391-3-4-.07(3)(f).
7. Suitable measures to control fires shall be provided.
8. Records documenting compliance of the composting facility with the Rules and the permit shall be kept for a minimum of three years from the date of the record, and be in a form suitable for submission or inspection by the Division.
9. The temperature, moisture, and oxygen range for the composting cycle is to be specified. A plan and procedure for monitoring the temperature, moisture, and oxygen range during the composting cycle is to be included in the operational narrative. This plan is to include contingencies for not meeting the specified ranges or the composting cycle. The minimum curing time for compost shall be at least 30 days.
10. Non-compostable waste residue shall be removed from the feedstock and compost, stored in a dumpster, and disposed of at permitted municipal solid waste landfill within 7 days.
11. Daily records shall be maintained that identify the weight or volume and origin of incoming waste. Daily records shall be maintained that identify the weight or volume of outgoing finished compost and company or person taking the finished compost.
12. The composting facility shall be closed in accordance with Rule 391-3-4-.11.
13. Before any waste is placed in the facility, the Permittee shall fully satisfy all applicable financial responsibility requirements including both closure and post-closure care, as provided by Chapter 391-3-4-.13.
14. Storage of finished compost on site is limited to12 months unless approved by the Division on a case-specific basis.
15. The owner or operator of a composting facility shall ensure that the composting process reduces pathogens.

    (1) Windrow composting: the compost material must be maintained at a temperature of 55 degrees Celsius (131 degrees Fahrenheit) or higher for fifteen (15) days or longer. The fifteen days do not need to be consecutive. During the period when the compost is maintained at 55 degrees Celsius or higher, there shall be a minimum of five (5) turnings of the windrow.

    (2) Aerated static pile composting process: all in-process compost shall be covered with sufficient insulating material, and the pile shall be maintained at a temperature of 55 degrees Celsius (131 degrees Fahrenheit) or higher for a pathogen reduction period of three (3) days.

Class 4 Composting Facilities
Class 4 composting facilities may compost feedstocks Categories A, B, & C. Class 4 composting facilities shall comply with design and operational standards for class 3 composting facilities and the additional design and operational standards listed below.

Additional Class 4 Design and Operational Standards

1. Facilities that compost with biosolids (sewage sludge) shall comply with all applicable federal regulations regarding sludge management at 40 CFR 501 and 503 & 40CFR 503, subpart B is incorporated by reference, including subsequent amendments or additions.
2. Receiving area of compost operation must be constructed on asphalt, concrete, or a composite liner system (outlined in Rule 391-3-4-.07(1)(d)1.c). The area is to provide for compost leachate collection. An annual inspection of this area should be included in the compost pad inspection written report.
3. Installation and implementation of an approved groundwater monitoring plan.

Class 5 Composting Facilities
Class 5 composting facilities may compost feedstock Categories A, B, C & D. Class 5 composting facilities shall comply with design and operational standards for class 4 composting facilities and the additional design and operational standards listed below.

Additional Class 5 Design and Operational Standards

1. Feedstock receiving area and mixing area is to be enclosed.
2. Demonstration of the ability to compost and the period of the composting cycle shall be provided for feedstock Category D.
3. Mandatory odor control plan.

(5) Criteria for Siting a Composting Facility

Any facility composting feedstocks, other than category A, or a facility covered by a Permit-By-Rule, shall comply with the following criteria from Chapter 391-3-4-.02 and Chapter 391-3-4-.05 for a solid waste handling facility.

The following criteria from must be met for a Class 2 composting facility:

1. Demonstration that if the facility is to be located in the 100-year floodplain, it will not restrict the flow of the 100-year flood, reduce the storage capacity of the floodplain, or result in a washout of solid waste [Rule 391-3-4-.05(1)(d)];
2. Demonstration that the facility will not be located in wetlands or that the use of wetlands has been permitted [Rule 391-3-4-.05(1)(e)];
3. A 50-foot undisturbed buffer shall be maintained between the composting operation and the property line.
4. A 200-foot buffer shall be maintained between the composting operation and any adjacent residences and/or any drinking water supply wells.
5. A 25-foot buffer shall be maintained between the composting operation and all streams.
6. A minimum 50-foot undisturbed buffer shall be maintained between the composting operation and any jurisdictional wetlands unless otherwise permitted by the United States Army Corps of Engineers.
7. Description of surrounding land uses up to ½ mile radius.
8. Airport safety restrictions, as required by Rule 391-3-4-.05(1)(c).

The following criteria from Chapter 391-3-4-.02 and Chapter 391-3-4-.05 must be met for Classes 3-6 composting facilities accepting categories A and B feedstocks:

1. A letter from the local government authority stating that the proposed facility complies with local zoning and land use ordinances [Rule 391-3-4-.05(1)(a)];
2. Submission of written verification by the applicant that the facility is consistent with the local or regional solid waste management plan [Rule 391-3-4-.02(4)(c)5];
3. Demonstration that if the facility is to be located in the 100-year floodplain, it will not restrict the flow of the 100-year flood, reduce the storage capacity of the floodplain, or result in a washout of solid waste [Rule 391-3-4-.05(1)(d)];
4. Demonstration that the facility will not be located in wetlands or that the use of wetlands has been permitted [Rule 391-3-4-.05(1)(e)];
5. A map of the topographic setting depicting features including all upstream and downstream drainage areas affecting or affected by the proposed site, floodplain, gullies, karst conditions, wetlands, unstable soils and percent slope [Rule 391-3-4-.05(1)(k)(4)].
6. A hydrological assessment shall be submitted, as required by Rule 391-3-4-.05(1)(k). The bottom of the pad shall be constructed at least 5 feet above the seasonal high water table.
7. A 100-foot undisturbed buffer shall be maintained between the composting operation and the property line.
8. A 500-foot buffer shall be maintained between the composting operation and any adjacent residences and/or any drinking water supply wells.
9. A 50-foot buffer shall be maintained between the composting operation and all streams.

10. A minimum 50-foot undisturbed buffer shall be maintained between the composting operation and any jurisdictional wetlands unless otherwise permitted by the United States Army Corps of Engineers.
11. Description of surrounding land uses up to ½ mile radius.
12. Airport safety restrictions, as required by Rule 391-3-4-.05(1)(c).
13. A site assessment report addressing the criteria listed above shall be prepared by a geologist registered in Georgia or a geotechnical engineer registered in Georgia and submitted to the Environmental Protection Division for review at the time of submitting a permit application for the proposed composting facility

For facilities composting feedstock categories C and D, the additional criteria must be met:

A groundwater monitoring system shall be installed for a composting facility, which has not received a specific waiver from ground water monitoring from the Division and the local governing authority. Monitoring parameters will be established based on the hydrogeologic data related to the site, the type of waste stream(s) accepted at the facility and waste characterization analyses performed on incoming wastes.

(6) In-vessel Operations

Class 6 Composting Facilities include composting facilities that employ the in-vessel method and process Feedstock Categories A, B, C and D. The siting and design/operational standards depend upon the type of system. Facilities employing an in-vessel composting method shall provide:

1. Description of the type of technology to be used including a copy of the manufacturer's operating manual, and drawings and specifications of the composting unit will be provided a process flow diagram of the entire process, including all major equipment and flow streams.
2. A discussion of the unit's requirements for power, water supply, and wastewater removal, and the steps taken to accommodate these requirements.
3. Description of the basic site design.
4. Description of the type and quantities of feedstock used.
5. Odor and vector control and mitigation procedures.
6. Contingency plan.
7. Evidence of compliance with local zoning and planning requirements.
8. Plan for materials handling and storage.
9. Description of the leachate collection system.
10. Description of the pad.
11. Facility personnel shall be adequately trained to perform the activities specified in this section.
12. Facility shall be operated in a manner to protect air and water quality.
13. Operator shall submit a system-specific temperature-monitoring plan.
14. The owner or operator of a composting facility shall ensure that the composting process reduces pathogens. The compost material must be maintained at a temperature of 55 degrees Celsius (131 degrees Fahrenheit) or higher for three (3) days.
15. A discussion of the method and frequency of final product testing.
16. Anticipated daily traffic flow to and from the facility, including the number of trips by private or public collection vehicles.
17. The procedure for unloading trucks (including frequency, rate, and method).
18. A contingency plan detailing corrective or remedial action to be taken in the event of equipment breakdown; air pollution (odors); unacceptable waste delivered to the facility; spills; and undesirable conditions such as fires, dust, noise, vectors, and unusual traffic conditions.

(7) Testing

Class 3-6 facilities, including those that mix these categories with Category A feedstock, shall meet the following test standards and requirements.

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity and shall be conducted in a manner consistent with SW-846, as amended, TMECC and other applicable standards. The minimum number of samples that shall be collected and analyzed is shown in the table below. Samples to be analyzed for metals shall be composted prior to the analysis.

Minimum Frequency of Analysis

Amount of finished compost[1] (metric tons per 365 day period)	Frequency[2]
Less than 290	Once per year.
Equal to or greater than 290 but less than 1,500	Once per quarter (four times per year).
Equal to or greater than 1,500 but less than 15,000	Once per 60 days (six times per year).
Equal to or greater than 15,000	Once per month (12 times per year).

[1]Either the amount of finished compost applied to the land or prepared for sale or give-away for application to the land (dry weight basis).

[2]After the finished compost has been monitored for two years at the frequency in the above table, the facility may request that the Division reduce the frequency of monitoring.

2. All finished products will be tested for compost stability using one of the methods listed below.
    a. Temperature decline to near ambient conditions when not the result of improper management of the composting process. Composting records shall indicate appropriate schedules for turning, monitoring of moisture within the required range, and an appropriate mix of composting feedstocks.
    b. Reheat potential using the Dewar Compost Self-Heating Flask. The results must indicate a stable product. Temperature rise above ambient must not exceed 10°C for stable compost. Very stable compost will not exceed 10°C above ambient.
    c. Specific oxygen uptake. To be classified as stable the product must have a specific oxygen uptake rate of less than 0.1 milligrams per gram of dry solids per hour.
    d. Solvita^{TM} Compost Maturity Test. To be classified as stable the product must exhibit color equal or greater than six.
    e. Carbon dioxide evolution. To be classified as stable the product must not evolve more than 1,000 milligrams of carbon dioxide per liter per day.
3. In addition to testing required of this subsection, finished products produced from Category B, C and D materials will be tested for the presence of pathogens using the methods indicated below in accordance with 391-3-6-.17(7)(a)1.
    a. Either the density of fecal coliform in the finished compost shall be less than 1000 Most Probable Number (MPN) per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the finished compost shall be less than 3 MPN per 4 grams of total solids (dry weight basis) at the time the

finished compost is prepared for sale or give away in a container for application to the land.

4. In addition to the testing requirements contained in this subsection, all finished products produced from facilities receiving Category C and D feedstocks shall be analyzed for the metals. The concentration of contaminants shall not exceed the monthly average concentration (milligrams per kilogram) listed in the Code of Federal Regulations, title 40, section 503.13(b)(3), as amended.
5. The Division may approve alternative methods of compliance to meet the requirements of this section, including but not limited to sampling frequencies.